SONY

STEREO TURNTABLE SYSTEM

PS-X700

OPERATING INSTRUCTIONS

Before operating the unit, please read this manual thoroughly.
This manual should be retained for future reference.

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WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

OWNER'S RECORD

The model and serial numbers are located at the rear. Record these numbers in the space provided below. Refer to them whenever you call upon your Sony dealer regarding this product.

Model No. PS-X700 Serial No._____

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FEATURES

Biotracer electronic tonearm
The horizontal and vertical movement of the tonearm is monitored by the Biotracer's own sensors, and this information is transmitted to the tonearm by the tonearm's own linear torque motors to suppress resonance at low frequencies and to obtain the maximum signal-to-noise ratio.

Tonearm auto-balance and stylus force adjustments
The microcomputer automatically adjusts tonearm balance with the tonearm at the arm rest, and the stylus force is adjusted by the control on the front panel and digitally read out. You can even adjust the stylus force during record play.

Fully automatic system
- Record size is automatically set by a photo sensor system.

If no record is on the turntable, the tonearm will not descend but will automatically return to the arm rest.
- The muting system activates when the tonearm is lifted and deactivates after the tonearm lowers onto a record. There is no need to turn down the amplifier volume every time a stylus is placed on a record or when a cartridge is changed.
- When the tonearm lowers to the lead-in groove of a record, the cassette deck stand-by mode is released and the record mode assumed. When play finishes, the cassette deck is automatically set first in the record muting mode, then in the pause mode.

This synchronized operation is possible with Sony cassette decks equipped with a four-pin remote control jack which is connected with a Sony RM-65 synchro remote control unit.

Quartz lock and magnedisc servo system
The turntable maintains an accurate and drift-free speed by referring to a frequency generated by a very stable quartz oscillator, and with the aid of a speed monitoring system which utilizes a magnetic pick-up head and a pulse signal derived from a magnetic coating at the edge of the platter.

Linear torque BSL motor
Direct drive system with Sony's unique BSL (brushless and slotless) motor which has a high signal-to-noise ratio to virtually eliminate wow and flutter. Its high torque assures quick start to 33⅓ rpm after only a half revolution.

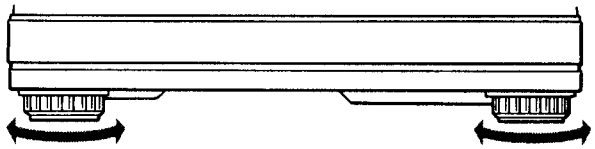
Electromagnetic brake system
Electromagnetic brake system stops the turntable quickly and smoothly.

PRECAUTIONS

On safety
- Operate the unit only on 120 V ac.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the cord, pull it out by the plug. Never pull the cord itself.

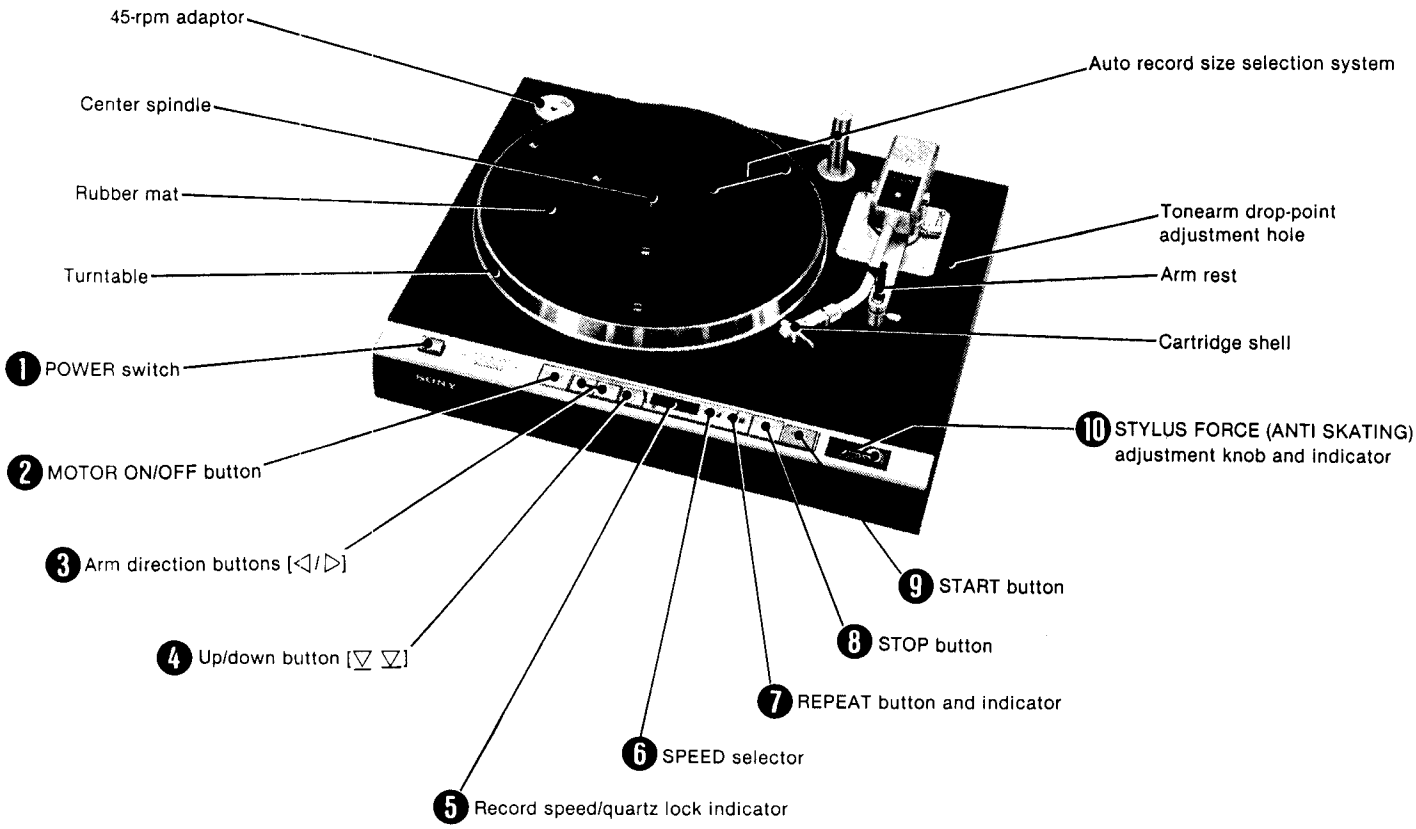
On installation
- Place the turntable on a level surface.
- Avoid placing the unit near electrical appliances (such as a television, hair dryer, or fluorescent lamp) which may cause hum or noise.
- Place the turntable where it will not be subject to any vibration, such as from speakers, slamming of doors, etc.
- Keep the unit away from direct sunlight, extremes of temperature, and excessive dust and moisture.

- The turntable has resilient feet that isolate the mechanism from external shock and vibration. If the unit has not been placed on a level surface, turn the feet to level the unit.



On repacking
❶ Take off the cartridge shell.
❷ Unscrew the arm rest height locking screw.
❸ Release the tonearm height adjustment knob and fix the tonearm at its highest position.
❹ Release the arm rest clamp. Secure the tonearm with cushions.
❺ Secure the transit screws on the motor board.
❻ Repack the turntable with the original cushions.

LOCATION AND FUNCTION OF CONTROLS



❶ POWER switch
Press to turn on the turntab e. To turn the turntable off, press it again.

❷ MOTOR ON/OFF button
This button causes the turntable to rotate or to stop independently of tonearm operation.

❸ Arm direction buttons [◁ / ▷]
To move the tonearm inward, press the ◁ button, and to move outward, the ▷ button. The tonearm is raised and continues to move while the button is pressed. The tonearm will stop when the button is released. For fine adjustments, press and immediately release the appropriate button.

❹ Up/down button [▽ ▽]
This button lifts and lowers the tonearm, and with the arm direction buttons, it is used for manual operation, even with the dust cover closed.

❺ Record speed/quartz lock indicator
Record speed (33-rpm or 45-rpm) will be indicated. The "LOCKED" indicator also appears in this window when the quartz system has locked the turntable at the proper speed.

❻ SPEED selector
Selects the record speed. When the POWER switch is turned on, the speed is always 33⅓ rpm unless the selector is pressed to select 45 rpm.

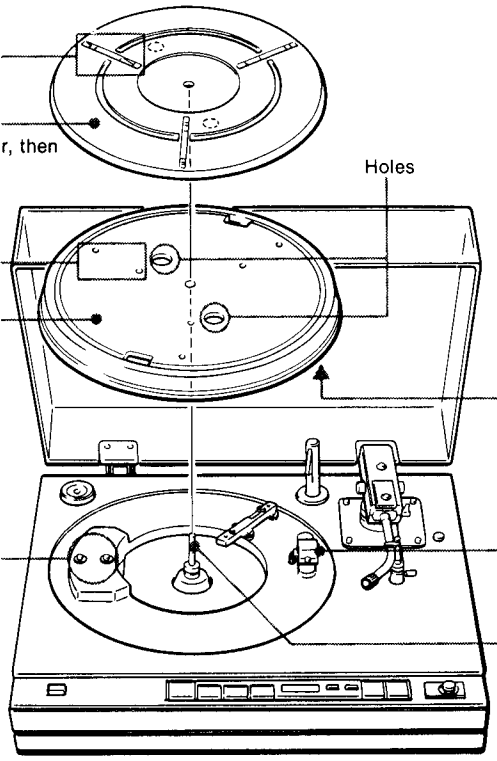
❼ REPEAT button and indicator
Press this button to repeat play. The indicator illuminates and repeat play continues until this button is pressed to stop it. If the STOP button is pressed during repeat play, the tonearm returns to the arm rest and repeat play will stop.

❽ STOP button
Press this button to stop during play. The tonearm returns to the arm rest and the turntable automatically stops rotating.

❾ START button
Press this button for automatic record play. The tonearm automatically descends onto the record. When play is finished, the tonearm returns to the arm rest and the turntable automatically stops rotating.

❿ STYLUS FORCE (ANTI SKATING) adjustment knob and indicator
Set the stylus force according to the cartridge you use. Stylus force and anti-skating force are both electronically set by this knob. It can be changed during record play if so desired.
The stylus force is indicated in 0.1 g steps.
"L" will blink when the cartridge shell is too light to set the tonearm auto-balance and "H" will blink when it is too heavy.

TURNTABLE ASSEMBLY

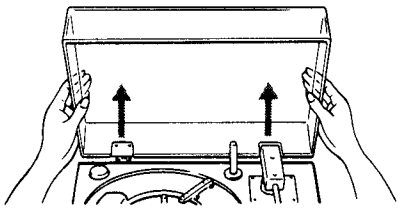

Prisms for auto record size selection
Holes
Holes for prisms
Magnetic coating for servo system is applied on the inside rim of the platter. Do not touch the coating.
Magnetic pick-up head. Do not touch.
Center spindle

3 Place the rubber mat. Match the projections on the back of the rubber mat to the circular holes in the platter, then align the holes in the rubber mat and the holes in the platter so that a beam from the lamp goes through.

2 Place the platter on the motor board by fitting the center hole over the center spindle.

1 Remove the transit screws on the motor board. Save these screws, since they will be required when repacking.

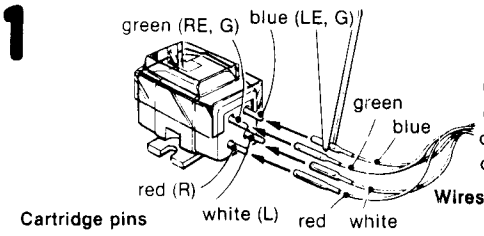
To take off the dust cover



Open the dust cover fully and slide it upward with both hands.

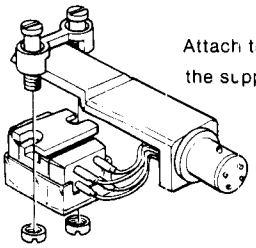
CARTRIDGE INSTALLATION

1



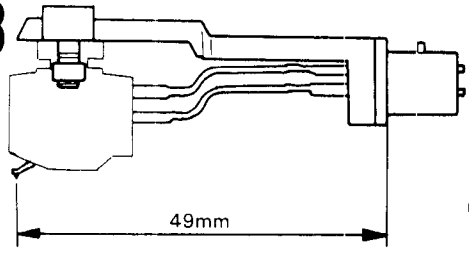
Connect the lead wires of the shell to the corresponding pins on the cartridge.

2



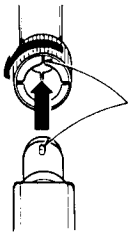
Attach the cartridge loosely with the supplied mounting screws.

3



Place the cartridge shell exactly over the diagram and adjust the position of the cartridge. Tighten the screws down. (Be sure that the cartridge is not inclined to the right or left.)

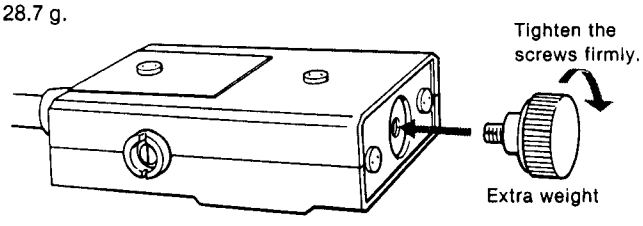
4



Match the guide pin of the cartridge shell with the slot of the locking collar and turn it until the shell is firmly locked.

On installation of the extra weight

The extra weight is not needed when the cartridge weight (including the supplied 7.7 g shell) is between 9.7 and 16.7 g. Install the thin extra weight if the cartridge weight is between 15.7 and 22.7 g and the thick extra weight if between 21.7 and 28.7 g.

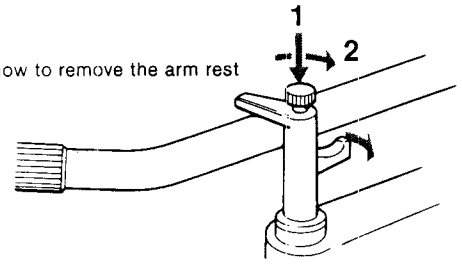


TONEARM ADJUSTMENT

STYLUS FORCE ADJUSTMENT

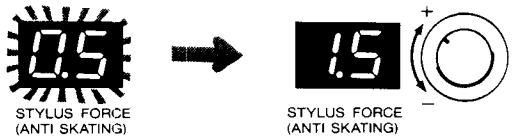
❶ Connect the power cord to an ac outlet.
Remove the stylus cover and release the clamp of the arm rest.
Turn the POWER switch ON.

How to remove the arm rest



❷ After the blink of the indicator is over, turn the STYLUS FORCE adjustment knob so that the indicator displays the appropriate stylus force of the cartridge. Adjustment range is from 0.5 to 3.0 g.

The blinking number indicates that the tonearm balance is being adjusted automatically.



Indicator "H" or "L" will blink when the cartridge shell (including a cartridge) is too heavy or too light and the tonearm balance can't be set automatically.
Install the extra weight when "H" blinks. When "L" blinks, change the cartridge shell or cartridge so that the total weight of the cartridge shell and cartridge wil be over 9.7 g.

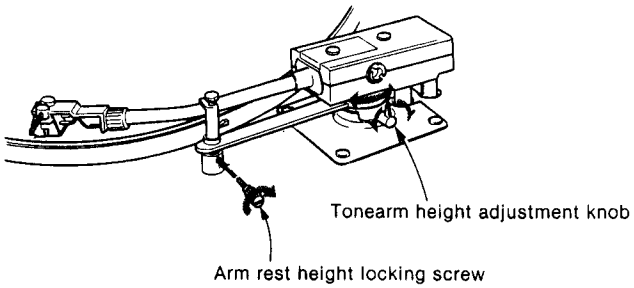
H means heavy weight, L means light weight.

- The indicator "L" will blink when the tonearm balance is being adjusted automatically with the tonearm secured in the arm rest. Be sure to remove the clamp of the arm rest.
- If the "L" or "H" blink for a long period of time, the electric current to the motor will flow excessively and the tonearm will get heated. This will not cause any damage, but we recommend that the POWER switch be turned off.

TONEARM/ARM REST HEIGHT ADJUSTMENT

For the best sound the tonearm must be parallel to the record. This can be done as follows after the tonearm balance is set automatically.

❶ Pull the tonearm height adjustment knob forward and release it.
❷ Place a record on the platter and move the tonearm over the record. Lower the tonearm by pressing the ▽ ▽ button.
❸ Move the tonearm height adjustment knob in the required direction so that the tonearm becomes parallel to the record.
The arm rest height is adjusted at the same time.
❹ When the adjustment is complete, press the STOP button and return the tonearm to the arm rest.
❺ Lock the tonearm height adjustment knob.
❻ Tighten the arm rest height locking screw (supplied).



To readjust thereafter, be sure to first loosen the arm rest height locking screw before releasing the tonearm height adjustment knob on step ❶.

TONEARM AUTO-BALANCE ADJUSTMENT

It is critically important for good sound reproduction that the stylus traces the record groove accurately and with the proper stylus force. To do this, the tonearm must first be balanced so that the proper stylus force can be applied. The Sony PS-X700 turntable automatically adjusts the tonearm balance electronically when the power is turned on or the START button is pressed while the tonearm is on the arm rest. And every time the record playing is finished, the tonearm balance is automatically adjusted again.

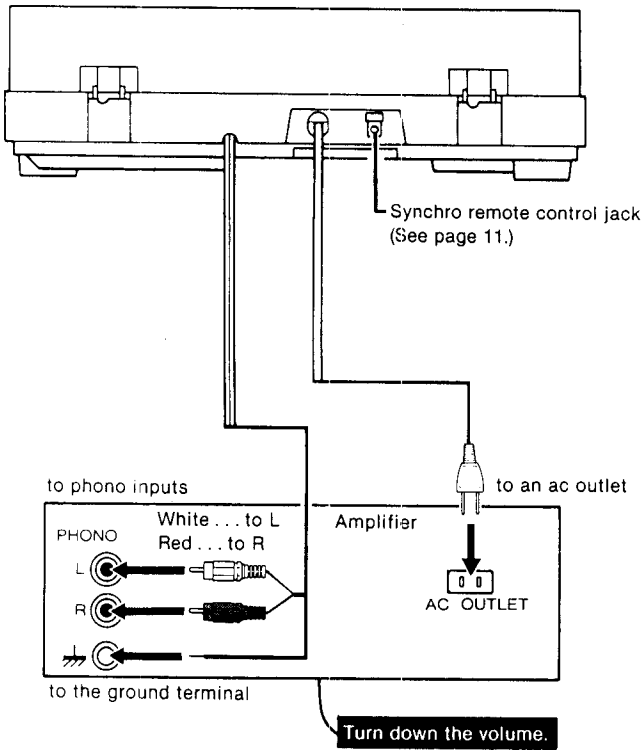
Cartridge shell or cartridge replacement

Before replacing the cartridge shell (or cartridge), secure the tonearm to the arm rest and turn the POWER switch off. To adjust the balance of the new cartridge shell (or cartridge), remove the stylus cover and release the clamp of the arm rest. Then turn the POWER switch on. When the blinking of the stylus force indicator is over, the adjustment is complete.

You can change the cartridge with the POWER switch ON. After changing the cartridge, move the tonearm from the arm rest with your hand and then replace it on the armrest to adjust the tonearm balance automatically. Be careful not to change the cartridge on the turntable.

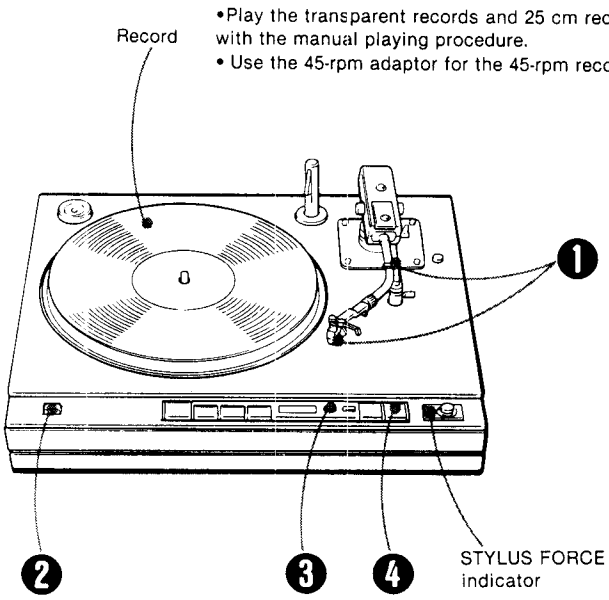
CONNECTION TO AN AMPLIFIER

Be sure to insert the cable connectors firmly into the jacks. Loose connections may cause hum and noise.



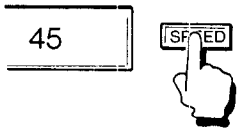
RECORD PLAYING

AUTO PLAY



❶ Remove the stylus cover and release the arm rest clamp.
❷ Depress the POWER switch (ON).
The stylus force is shown in display window and STYLUS FORCE indicator blinks while the tonearm balance is being adjusted automatically. The indicator stops blinking to show that the tonearm balance adjustment is over.

❸ To play a 45-rpm record, press the SPEED selector.

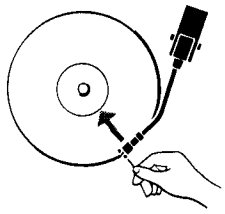


❹ Press the START button.
After the stylus force indicator blinks again and the tonearm balance adjustment is finished, the record playing will begin.

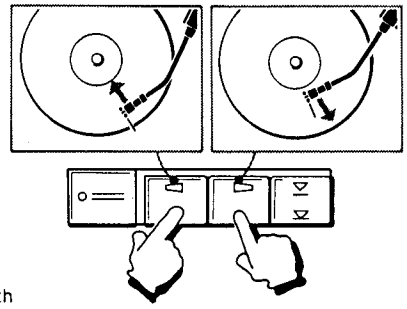
When the tonearm reaches the end of the record, the turntable will stop and the tonearm will automatically return to the arm rest. Secure the tonearm to the arm rest and turn the POWER switch off.

TO BEGIN RECORD PLAY AT A PARTICULAR POINT—MANUAL PLAY

❶ Remove the stylus cover and release the clamp of the arm rest.
❷ Depress the POWER switch (ON).
Wait till the stylus force indicator stops blinking. The tonearm will automatically return to the arm rest if you move the tonearm while the indicator is blinking.
❸ To play a 45-rpm record, press the SPEED selector.
❹ Move the tonearm over the desired part of the record.



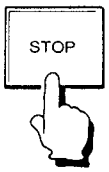
You can remove the tonearm with the ◁ or ▷ buttons instead of by hand.



Move the tonearm over the record by keep depressing the ◁ button. For fine adjustments, press and immediately release the ◁ button or the ▷ button.

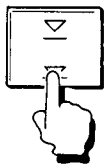
❺ Press the MOTOR ON/OFF button.
❻ Press the ▽ button. The stylus lowers onto the record and play begins.

TO STOP DURING PLAY



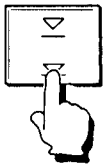
The tonearm will return to the arm rest and the turntable will stop rotating

TO LIFT UP THE STYLUS DURING PLAY



The stylus is lifted from a record. (The turntable is rotating.)

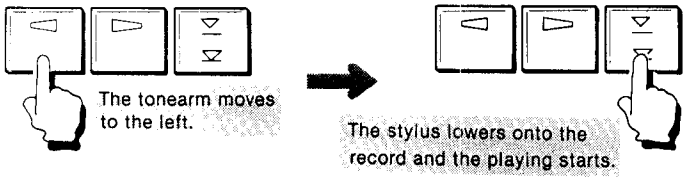
To start the play



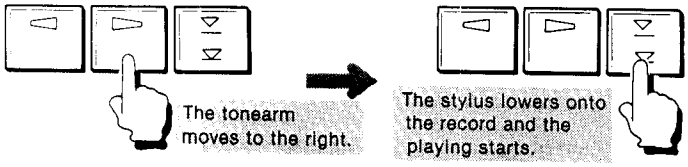
The stylus lowers onto the record and the playing starts.

TO MOVE TO A DIFFERENT PART OF A RECORD WHILE THE RECORD IS PLAYING

To play a forthcoming selection

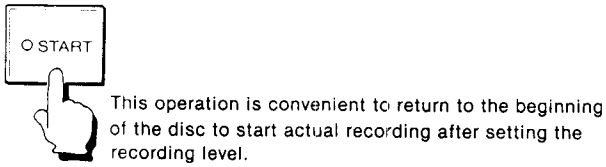


To play a passed selection

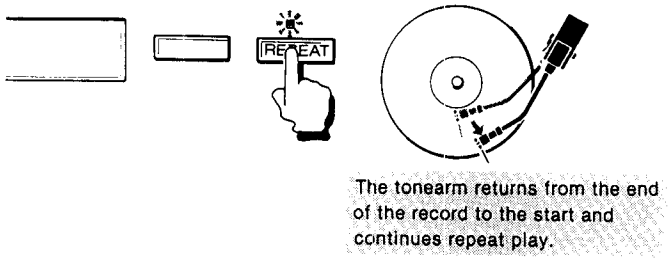


To return to the starting point of the record

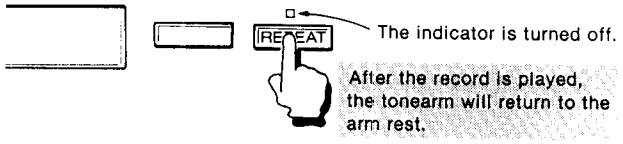
The tonearm returns to the start of the record and continues playing.


O START
This operation is convenient to return to the beginning of the disc to start actual recording after setting the recording level.

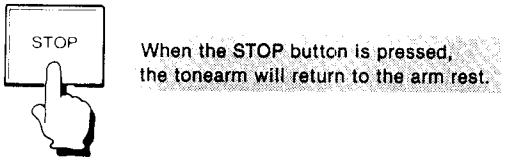
TO REPEAT PLAY



To stop repeat play



To stop during repeat play



INSTANTANEOUS START OF PLAY (CUEING)

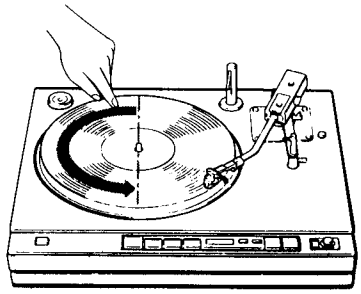
Owing to the powerful starting torque of the turntable, instantaneous start on a record is possible.

Preparation

Amplifier : set to a normal listening level.
Turntable : place a record, turn the POWER switch on and select the correct record speed.

Operation

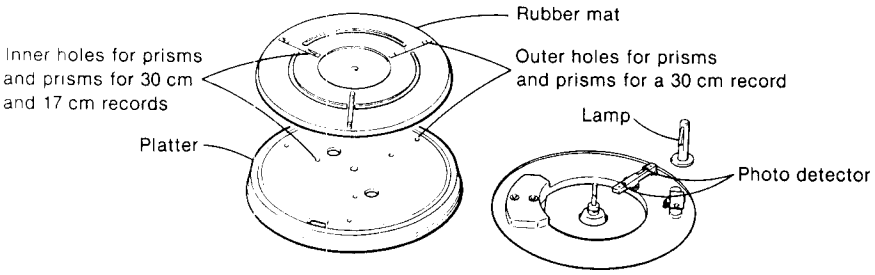
❶ Move the tonearm over the lead-in groove of the desired music and lower the tonearm onto the record with the ▽ button.
❷ Rotate the turntable **slowly** by hand and at the starting groove of the music, it begins to be heard. Reset the stylus at the point just before the starting of the music by rotating the turntable by hand in the opposite direction a little. The starting point is now found.
❸ From the point indicated in the illustration below, rotate the turntable by hand slowly in the opposite direction up to the center position. (The rotation corresponds to the turntable starting torque.)



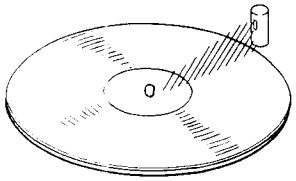
❹ Press the MOTOR ON/OFF button. The music starts to play instantaneously.

HOW THE AUTO RECORD SIZE SELECTION WORKS

By pressing the START button, the tonearm goes automatically into the lead-in groove of whether 30 cm or 17 cm. A beam from the lamp is transmitted through the prisms provided on the rubber mat and the platter to the photo detector which actives the auto record size selection.

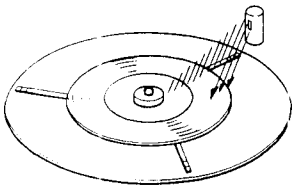

Rubber mat
Inner holes for prisms and prisms for 30 cm and 17 cm records
Outer holes for prisms and prisms for a 30 cm record
Lamp
Platter
Photo detector

When a 30 cm record is to be played,



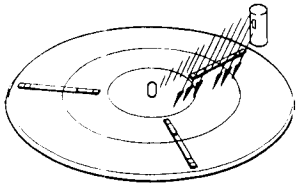
both inner and outer prisms are covered so no beam is transmitted to the photo detector.

When a 17 cm record is to be played,



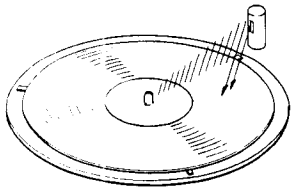
the inner prisms are covered so a beam is transmitted through the outer prisms to the photo detector.

When there is no record on the platter,



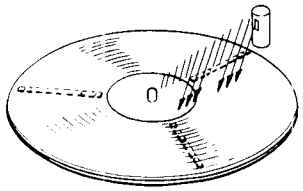
a beam is transmitted through both the inner and outer prisms to the photo detector. Even if the START button is pressed mistakenly, the tonearm does not lower but returns to the arm rest.

When a 25 cm record is to be played,



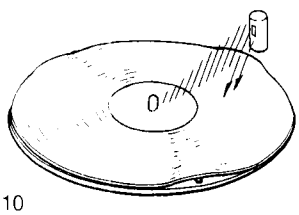
the tonearm lowers to the same point if a 17 cm record were on the platter, since only the inner prisms are covered. To play a 25 cm record, move the tonearm over the record, depress the MOTOR ON/OFF button and lower the tonearm by pressing the ▽ ▽ button.

When a transparent record is to be played,



a beam passes through both the inner and outer prisms to the detector so the tonearm does not lower onto a record. To play a transparent record, move the tonearm over the record, depress the MOTOR ON/OFF button and lower the tonearm by pressing the ▽ ▽ button.

When a warped record is to be played,



if the record is badly warped, a beam may pass through the prisms to the detector and cause a malfunction of the auto record size selection.

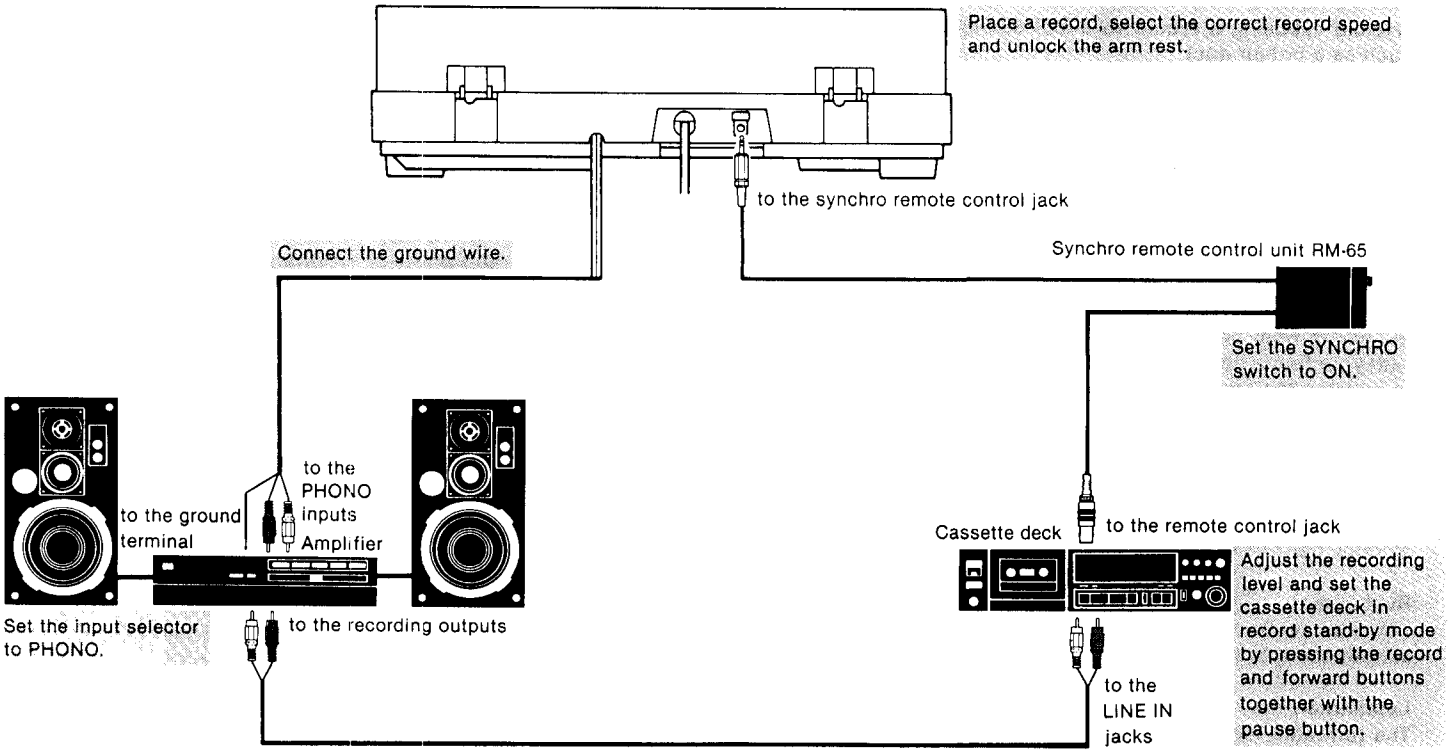
SYNCHRONIZED PLAY OF THE TURNTABLE AND THE CASSETTE DECK

—With an RM-65 synchro remote control unit connected

Disc recording starts when the disc playing begins. When the tonearm lowers to the record, the tape deck goes into the the record mode and, when the tonearm is lifted up, the deck goes into the auto record muting mode for four seconds, then into the pause mode.

Cassette deck which can be used with your turntable for this special synchronized operation are those Sony models which are equipped with a 4-pin remote control jack.
An RM-65 synchro remote control unit (optional) is required to connect the turntable and the cassette deck.

CONNECTION AND PREPARATION


Place a record, select the correct record speed and unlock the arm rest.
to the synchro remote control jack
Connect the ground wire.
Synchro remote control unit RM-65
Set the SYNCHRO switch to ON.
to the PHONO inputs
to the ground terminal
Amplifier
Cassette deck
to the remote control jack
Adjust the recording level and set the cassette deck in record stand-by mode by pressing the record and forward buttons together with the pause button.
Set the input selector to PHONO.
to the recording outputs
to the LINE IN jacks

RECORDING

Desired action	Turntable operation	Synchronized operation of the cassette deck
To record from the beginning of a record...	Press the START button.	When the tonearm lowers onto the record, the pause mode is released and recording begins.
To lift up the tonearm to move to a different point on a record...	Press the ▽ ▽ button. Or press the ◁ or ▷ button.	When the tonearm is lifted up, auto record muting activates for four seconds, then the pause mode is assumed.
To record from a point some way into the record...	Bring the tonearm over the desired point and press the ▽ ▽ button. When the turntable is not rotating, press the MOTOR ON/OFF button and then the ▽ ▽ button.	When the tonearm lowers onto the record, the pause mode is released and recording begins.
To stop recording during record play...	Press the STOP button.	When the tonearm is lifted up, auto record muting activates for four seconds, then the pause mode is assumed.
When record play ends...	The tonearm returns automatically to the arm rest.	When the tonearm is lifted up, auto record muting activates for four seconds, then the pause mode is assumed.

TIPS ON RECORD HANDLING

● Before playing, clean the record with a record cleaner or soft cloth. If a spray cleaner is used, make sure that it has dried completely before playing the record. Playing the record before the cleaner has dried may damage the record.
It is a good idea to clean the record again before putting it away.
● Handle a record by its edges and do not touch the grooves. Fingerprints on the record surface may encourage an accumulation of dust, resulting in impaired tone.
● Use a commercially available anti-static spray to neutralize the static electricity on a record.
● Avoid exposing a record to direct sunlight or sources of heat, such as a hot-air duct.
● Store your records vertically. They should not be compressed.

MAINTENANCE

Stylus
Before playing a record, clean the stylus with a soft brush. Brush the stylus from back to front. Never attempt to clean the stylus with your finger tip. If a fluid stylus cleaner is used, make sure not to moisten the stylus too much.

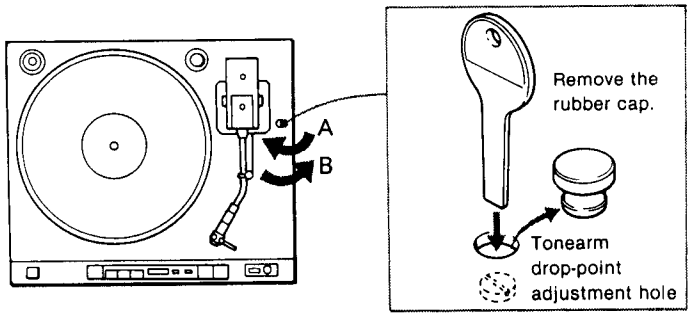
Cabinet
Clean the cabinet and dust cover periodically with a soft dry cloth. If the stains are difficult to remove, use a cloth moistened with a mild detergent solution. Do not use solvents such as alcohol, benzine or thinner, since they will damage the finish.

Rubber mat
When the rubber mat becomes dirty, wipe it gently with a soft cloth slightly dampened with water.

Lubrication
The turntable requires no periodic lubrication. The motor shaft is lubricated at the factory for the life of the turntable.

TONEARM DROP-POINT ADJUSTMENT

At the factory, the tonearm has been adjusted to have the correct drop-point in auto play. If this needs to be readjusted, proceed as follows.
❶ Secure the tonearm to the arm rest.
❷ Remove the rubber cap of the tonearm drop-point adjustment hole located at the right side of the arm base and insert the supplied drop-point adjustment key into the hole.
❸ To change the drop-point inward, turn the screw slightly to the A direction.
To change the drop-point outward, turn the screw slightly to the B direction.



❹ Start auto play and check that the stylus lowers on the correct drop-point.
● Once it is properly adjusted with a 30 cm (12 in.) record, the drop-point will be correct for a 17 cm (7 in.) record as well.

SPECIFICATIONS

Turntable

Platter	32 cm (12⅝ in.), aluminum-alloy diecast
Motor	Linear torcue BSL (brushless and slotless) motor
Drive system	Direct drive
Control system	Quartz lock control, magnedisc servo control system
Speed	33⅓ rpm, 45 rpm
Starting characteristics	Comes to norninal speed within a half revolution (33⅓ rpm)
Wow and flutter	0.015% (WRMS)* 0.025% (WRMS)
Signal-to-noise ratio	78 dB (DIN-B)
Load characteristics	0% up to 150 g stylus force (at lead-in groove of a record)
Speed deviation	Within 0.003%
Automatic system	Lead-in, return, reject, repeat, record size selection, tonearm balance

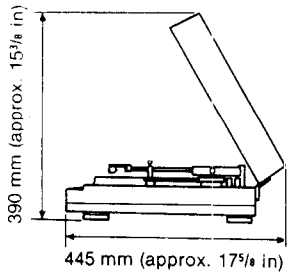
Tonearm

Type	Electronic tonearm, universal
Pivot-to-stylus length	235 mm (9⅜ in.)
Overall arm length	315 mm (12½ in.)
Tracking error	+2°40′, −1°40′
Stylus force adjustment range	0.5 - 3.0 g (electronic adjustment)
Cartridge shell weight	7.7 g
Cartridge weight range (including a cartridge shell)	9.7 - 16.7 g 15.7 - 22.7 g (with thin extra weight) 21.7 - 28.7 g (with thick extra weight)
Height adjustment range	Within 6 mm

General

Power requirements	120 V ac, 60 Hz
Power consumption	23 W
Dimensions	Approx. 480 × 165 × 420 mm (w/h/d) (19 × 6½ × 16⅝ in.) including projecting parts and controls

With the dust cover opened



Weight	Approx. 12.5 kg (27 lbs 9 oz), net Approx. 14.5 kg (32 lbs), in shipping carton
Supplied accessories	45-rpm adaptor (1) Extra weight (2) Cartridge shell (1) Cartridge mounting screws (1 set) Tonearm drop-point adjustment key (1) Arm rest height locking screw (1)

Design and specifications subject to change without notice.

* This new measuring method concerns only the turntable assembly, including the platter. It excludes wow and flutter caused by the tonearm, the cartridge, or the record. Measured by obtaining signal from magnetic pick-up head.

TROUBLE CHECKS

The following trouble checks will help you correct most common problems encountered with a turntable system. Should any problem persist after you have made these checks, consult your nearest Sony service facility.

Before proceeding with these trouble checks, first refer to the connections on page 7 and the operating procedures on page 8.

TROUBLES	CAUSES	WHAT TO DO
The tonearm does not lower on the record but returns to the arm rest.	Transparent record	Play the record manually.
	Warped record	
"L" or "H" blinks on the STYLUS FORCE indicator.	The cartridge and the cartridge shell are too heavy or too light.	Check the cartridge (including the cartridge shell) weight.
	The tonearm is secured to the arm rest.	Release the arm rest clamp.
The tonearm always lowers on the point for 30 cm records.	A rubber mat other than the one supplied being used.	Use the supplied rubber mat.
	Incorrect placement of the supplied rubber mat	Align the prisms in the rubber mat with the holes for prisms of the platter.
Auto return does not operate at the end of play.	A record with shallow return grooves being played by a cartridge with low stylus-force	Apply more stylus-force.
Impaired tone quality	Improper stylus-force	Apply proper stylus-force (See page 6.)
	Dusty stylus	Clean the stylus with a soft brush from back to front.
	Worn stylus	The stylus life is approx. 400 hours. Replace with a new stylus.
No audio from one channel	Loose connection of phono cord	Connect the cord firmly.
	Loose attachment of the cartridge shell to the tonearm	Fix the shell to the tonearm firmly.
	Dirty cartridge shell terminals.	Clean the terminals with a soft dry cloth.
Steady low-pitched humming sound	Ground wire is not connected to the amplifier.	Connect the ground wire to the amplifier.
Groove skipping ; tonearm skating; tonearm not advancing.	Improper stylus force	Apply proper stylus-force. (See page 6.)
	Turntable not level	Place the turntable on a level surface.
	Defective record	—
Loud rumble or low-frequency howl*	The turntable is subjected to external vibration.	Place the turntable on a solid surface free from external vibration.
	The turntable is placed too near the speaker.	Locate the turntable as far away from the speaker as possible.

* This is called "acoustic feedback" and is caused when vibrations from the speakers are transmitted through the air or via solid objects (such as the shelves, the cabinet, the floor, etc.) to the turntable, where it is picked up by the stylus, amplified and reproduced through the speakers once again.

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